

Agrotis lata TREITSCHKE, 1835,
a senior synonym of *A. dirempta* STAUDINGER, 1859
(Lepidoptera : Noctuidae) *

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Summary

Agrotis lata TREITSCHKE, 1835 is found to be a senior subjective synonym of *A. dirempta* STAUDINGER, 1859. A historical review of the circumstances which led *A. lata* to be confused with *A. crassa* (HÜBNER, [1800-1803]) is presented. A revised arrangement of the nominal species group taxa within the *A. crassa* group is suggested. Since [*A.*] *conspicua* (HÜBNER, [1823-1824]) sensu BOURSIN, 1964 et POOLE, 1989 is shown to be a name wrongly applied to *Noctua crassa* HÜBNER, [1800-1803] through misidentification, the synonymy *Noctua conspicua* HÜBNER, [1823-1824] = *Noctua agricola* BOISDUVAL, 1829 is reevaluated. Some diagnostic remarks for separating *A. crassa* and *A. lata* on the male antennae and genitalia of both sexes are also reported. A lectotype for *A. lata* is designated.

Résumé

L'auteur considère *Agrotis lata* TREITSCHKE, 1835, comme un synonyme subjectif plus ancien de *A. dirempta* STAUDINGER, 1859. Revue historique des circonstances qui ont abouti à la confusion de *A. lata* avec *A. crassa* (HÜBNER, [1800-1803]). L'auteur suggère une révision de l'arrangement des taxa du groupe de l'espèce nominale dans le groupe d'*A. crassa*. Puisqu'il est montré que le nom de [*A.*] *conspicua* (HÜBNER, [1823-1824]) sensu BOURSIN, 1964 et POOLE, 1989, a été attribué à tort à *Noctua crassa* HÜBNER, [1800-1803] par erreur d'identification, la synonymie *Noctua conspicua* HÜBNER, [1823-1824] = *Noctua agricola* BOISDUVAL, 1829 est réévaluée. Présentation de quelques remarques diagnostiques pour séparer *A. crassa* et *A. lata* d'après les antennes du mâle et les genitalia des deux sexes. Désignation d'un lectotype pour *A. lata*.

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Introduction

Agrotis crassa (HÜBNER, [1800-1803]) (type locality : [Europa]) and *Agrotis dirempta* STAUDINGER, 1859 (type locality : [Spanien, Andalusien, Granada], Alhambra) are two closely related species. The former is a widespread Palaearctic species known from western Europe and North Africa to Central Asia (FIBIGER, 1990), southwards reaching also northern Arabia (KOZHANTSHIKOV, 1937). *Agrotis dirempta* occurs in western-central Mediterranean : Iberian Peninsula (Spain and Portugal), Italy (Sardinia and Sicily), Malta, and North Africa (from Morocco eastwards to Cyrenaica) (FIBIGER, 1990). A doubtful record for Syria is given by CORTI (1931-1933, as "*afflouensis* DECKERT i.l.").

The range of *A. dirempta* is largely sympatric with that of *A. crassa*, although there is evidence of different ecological preferences, *dirempta* being more thermophilous, linked to lowland areas and being on the wing later in the season (RUNGS, 1982 ; HACKER, 1983). Such observations, however, have not been wholly confirmed with detailed research in some Sardinian localities (SIEGEL, 1989). Specimens of both species collected in the same period in Musei (prov. Cagliari, Sardinia) are also present in the Regional Museum of Natural Sciences of Turin (*dirempta*, 9 ♂♂, 1/17.IX.1972 ; *crassa*, 8 ♂♂, 4/15.IX.1972 ; F. HARTIG leg.).

Both species are highly variable : differences in the size, colour and wing pattern are usually scarcely reliable for correct diagnosis. Nevertheless, certain phenotypes occur almost exclusively within *dirempta* populations. In particular, specimens from Italy of both sexes with highly variegated forewings and contrasting colours, as well as females with completely darkened hindwings and outstanding pale veins, are characteristic of *dirempta*.

It is the male antenna which yields the main external character of diagnostic value. In *dirempta* the antenna is greatly pectinated with lamellae up to the antennal apex. The lamellae are always longer than those of *crassa* ; in the male of *crassa* the shorter pectinations cease well before the apex (FIBIGER, 1990). Objectively, as evidenced by ROTHSCHILD (1920), magnification of the antennal apex shows that the very last antennal segments (4th-5th) in *dirempta* are also devoid of pectinations (Figs 4-5), but the difference in comparison with the male of *crassa* is clear (Figs 2-3).

Between the descriptions of *crassa* and *dirempta*, TREITSCHKE (1835) described *Agrotis lata* from Sicily on characters corresponding to those exclusive of *dirempta*. Nevertheless, the name *lata*, after some nomen-

clatural fluctuations, has been traditionally referred to *crassa* as a form or variety.

Historical review

Agrotis lata TREITSCHKE, 1835 (type locality: 'Sicilien') is currently considered to represent a form of *A. crassa*, but in the original description the author compared the new species with *crassa* stressing the longer antennal pectinations of *lata* males: "...antennis maris valde pectinatis...Fühler auffallend stärker und länger...". This character was also emphasized in the figures and redescriptions of *lata* by GEYER ([1834-1835], in [1827-1838]), FREYER (1835, in 1833-1836), HEEGER (1838) and HERRICH-SCHÄFFER ([1844], [1851], in 1843-1856).

The taxonomic significance of such a difference was subsequently underestimated because ZELLER (1847), reporting a female somehow intermediate between the two taxa collected in the surroundings of Rome, raised doubts about the validity of *lata*. His detailed discussion, however, relied only upon the markings of this female compared to the figures of former authors. Unless one has the opportunity to examine phenotypes exclusive of *dirempta*, separating the females of the *A. crassa* group solely on external appearance is a difficult task. ZELLER (1847) and later CALBERLA (1888) observed the characteristic large *crassa* specimens with contrasting markings which occur in central Italy. Because of the size of these specimens CALBERLA (1888) also detected male antennae slightly larger than those of normal-sized *crassa*, although unquestionably smaller than those of true *lata* (pers. obs.).

Owing to ZELLER's scepticism and CALBERLA's suggestion of intergradation between *lata* and *crassa*, the name "*lata*", unfortunately meaning "broad, wide", was applied to large *crassa* specimens (often to females from southern Europe). Other authors failed to observe differences in the male antennae, since they compared *crassa* with ...*crassa* (e.g. LEDERER, 1857). From that moment *lata* was accepted as an infraspecific taxon. Most of the authors considered it as an aberration, form or variety of *crassa*, even though some of them recalled a certain "development" of the male antennae (HAMPSON, 1903; CULOT, 1909-1913; CORTI, 1931-1933).

Several misconceptions on *lata* were due to CORTI. At first CORTI (in litt., FERNÁNDEZ, 1929) suggested that *Agrotis castellana* FERNÁNDEZ, 1929 [= *dirempta*] might have been *dirempta*, a hybrid *obesa* x *crassa*, or even an extreme form of *crassa*, recalling that the "south european" *crassa* f. *afflouensis* [= *dirempta*] was characterized by the male

antennae more heavily pectinated than those of nominate *crassa*. Shortly after, CORTI (1930) criticized the original description of *lata* by TREITSCHKE (1835), stating that upon several specimens from Sicily he was not able to detect any constant difference with *crassa* as to the colour or wing pattern. He also considered that the male antennae, although more robust than those of nominate *crassa*, were characteristic of *crassa* because of pectinations clearly ceasing before the tip.

It can now be concluded that the Sicilian specimens examined by CORTI were not topotypes of *lata*, but merely specimens of *crassa*, the species being very common in Sicily. Since *crassa* specimens from Sicily are on average as large as those from central Italy, CORTI fell into a similar error to CALBERLA's (1888), presuming that their comparatively stouter antennae were equivalent to those described by TREITSCHKE for *lata*. A closer look at the figures of *lata* depicted by the previous authors would have shown that the male of *lata* has much heavier pectinations up to the tip.

ROTHSCHILD (1920) separated *lata* from *crassa* using North African material recalling, besides colour and wing markings, the occurrence in *lata* of longer pectinations nearly up to the antennal apex. Following his concept of *lata*, CORTI (1930, 1931-1933) also criticized ROTHSCCHILD stating that those specimens belonged to *dirempta*.

Basically, CORTI (1931-1933) presented his ideas with the following arrangement (square brackets of mine): *dirempta* STGR (= *lata* sensu ROTHSCCHILD) as valid species; *afflouensis* [CORTI, 1932] [= *dirempta*] and *lata* TR. as forms of *crassa* [with a much wider distribution than currently recognized]; *fulva* TURATI [= *dirempta*] as valid species.

More recently, SIEGEL (1989), realized the problems regarding the taxa *crassa*, *dirempta* and *lata*, and suggested to provisionally consider *lata* as a good species.

Taxonomy

Since *Agrotis lata* appears to agree completely with *A. dirempta* and the latter has also been recorded from Sicily (SCHWINGENSCHUSS, 1942; MARIANI, 1943, 1948; MARIANI & KLIMESCH, 1957; FIBIGER, 1990) it can be stated that the two names represent the same species. The two syntypes of *Agrotis lata* (one male and one female) from Sicily in the TREITSCHKE collection (Hungarian Natural History Museum, Budapest) have been kindly checked by Dr. L. RONKAY. He was able to confirm that the male, here designated as lectotype, shows the

characteristic features of *A. dirempta*. The male has one antenna broken, but the other is entire and clearly reveals longer pectinations than *crassa* up to the apex (Fig. 1).

Owing to the character congruence between *lata* and *dirempta*, the following nomenclatural arrangement of the *Agrotis crassa* group is presented (infrasubspecific names omitted) :

***Agrotis crassa* (HÜBNER)**

Noctua crassa HÜBNER, [1800-1803], Samml. eur. Schmett. 4 : pl. 32, fig. 152 (f). [1]

= *golickei* ERSCHOV, 1872

= *huguenini* RÜHL, 1891

= *modesta* (SCHAWERDA, 1931) [2]

= *subalpina* O. BANG-HAAS, 1937 [3]

= *conspicua* sensu BOURSIN, 1964 et POOLE, 1989, nec HÜBNER, [1823-1824] [4]

***Agrotis lata* TREITSCHKE, *bona* sp., stat. rev.**

Agrotis lata TREITSCHKE, 1835, Schmett. Eur. 10 (2) : 24.

= *dirempta* STAUDINGER, 1859 **syn. n.**

= *fulva* (TURATI, 1924) **syn. n.** [5]

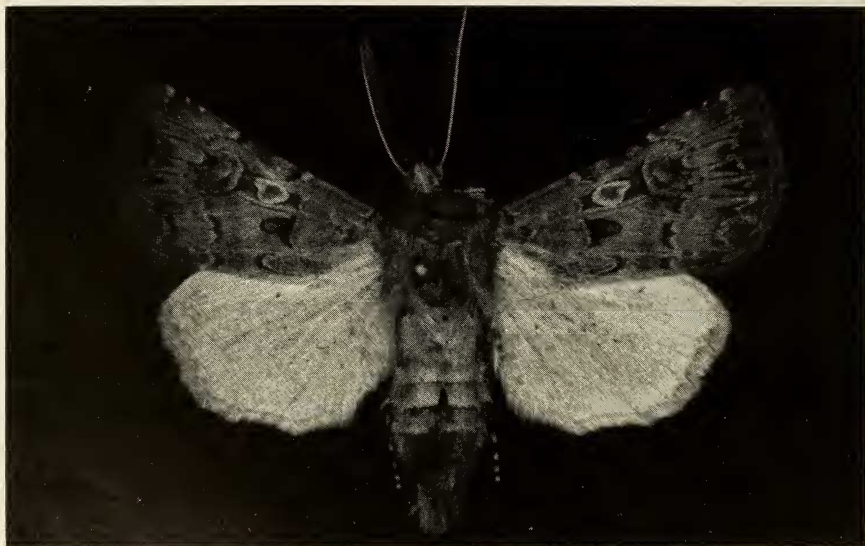


Fig. 1. *Agrotis lata* TREITSCHKE, 1835, lectotype, Sicily.

- = *castellana* FERNÁNDEZ, 1929 **syn. n.**
- = *afflouensis* CORTI, 1932 **syn. n.** [6]
- = *aflouensis* sensu auct. [6]

Nomenclatural notes

[1] HÜBNER figured a male of *crassa* on the same plate ([1800-1803], Samml. eur. Schmett. 4 : pl. 32, fig. 151) under the name of *Noctua tritici*. Therefore, the specimen illustrated cannot be considered a syntype of *crassa* because it was not designated by HÜBNER ([1800-1826]). Another male of *crassa* was subsequently figured by HÜBNER, [1809-1813], Samml. eur. Schmett. 4 : pl. 121, fig. 560.

[2] This nominal taxon may be considered either infrasubspecific or subspecific since it was described by SCHAWERDA (1931) as "*Euxoa crassa* Hb. ab. (var. ?) nov. *modesta*".

[3] DANNEHL (1925) described two infrasubspecific forms of *A. crassa* from Südtirol : f. *hellwegeri* and ab. *subalpina*. Both were registered as varieties by BANG-HAAS (1927), but up to that date infrasubspecific status can be assigned to them, because of their sympatric occurrence (Code, art. 45 (g)(ii)(1)). Thereafter, BANG-HAAS (1937) clearly conferred subspecific rank to *subalpina*, taking the authorship of the name (Code, art. 50 (c)(i)).

[4] BOURSIN (1964) identified *Noctua conspicua* HÜBNER, [1823-1824], Samml. eur. Schmett. 4 : pl. 154, figs 718-719, as a female specimen of *Agrotis crassa* (HÜBNER, [1800-1803]) and established the relevant synonymy. POOLE (1989) proposed the same synonymy again.

Following the examination of the original figures such synonymy has proven to be erroneous. There is no evidence that the specimen depicted by HÜBNER is a female. If it is a female, it disagrees with HÜBNER's figure of female *crassa* ([1800-1803], Samml. eur. Schmett. 4 : pl. 32, fig. 152), while it agrees better with GEYER's figure ([1834-1835], Samml. eur. Schmett. 4 : pl. 179, fig. 853) of *Noctua agricola* BOISDUVAL, 1829. In any case it cannot represent *crassa* because of the distinct "kidney-shaped" reniform stigma characteristic of *agricola* (in *crassa* the reniform is "O"-shaped).

Accordingly, a synonymy previously in use relevant to an *Euxoa* species has to be reevaluated :

Noctua conspicua HÜBNER, [1823-1824] (= *Noctua agricola* BOISDUVAL, 1829) **syn. rev.**

[5] Formerly described by TURATI, in TURATI & ZANON (1922), as infrasubspecific, "*Euxoa crassa lata fulva* TRTI. - Forma nuova", the valid description dates from TURATI (1924) : "*Euxoa fulva* TRTI. n. sp. ?".

[6] The name *afflouensis* CORTI, 1932 has been often quoted as *aflouensis* by several authors. The first to use it was probably BANG-HAAS (1937). It

is still rather unclear whether *afflouensis* represents an unjustified emendation for *afflouensis* (from Aflou, Algeria) or an incorrect subsequent spelling. In the first case it would be available and a junior objective synonym of *afflouensis* CORTI, 1932 (Code, art. 33 (b)(iii)). In the latter case it would be unavailable (Code, art. 33 (c)).

There is little doubt that *afflouensis* CORTI, 1932 is a correct original spelling (Code, art. 32 (c)(ii)) since in the original publication itself the name is repeated both in the index and in the plates, in spite of other taxa bearing the name *afflouensis* and quoted with only one "f". Moreover, there is no reference to Aflou, because the type locality is "Nordafrika, Malta, Syrien". It should be also noted that the name *afflouensis* was already in use before its validation by CORTI (1932, in 1931-1933), always being spelled as *afflouensis* (e.g. CORTI, in litt., FERNÁNDEZ, 1929).

Diagnostic remarks

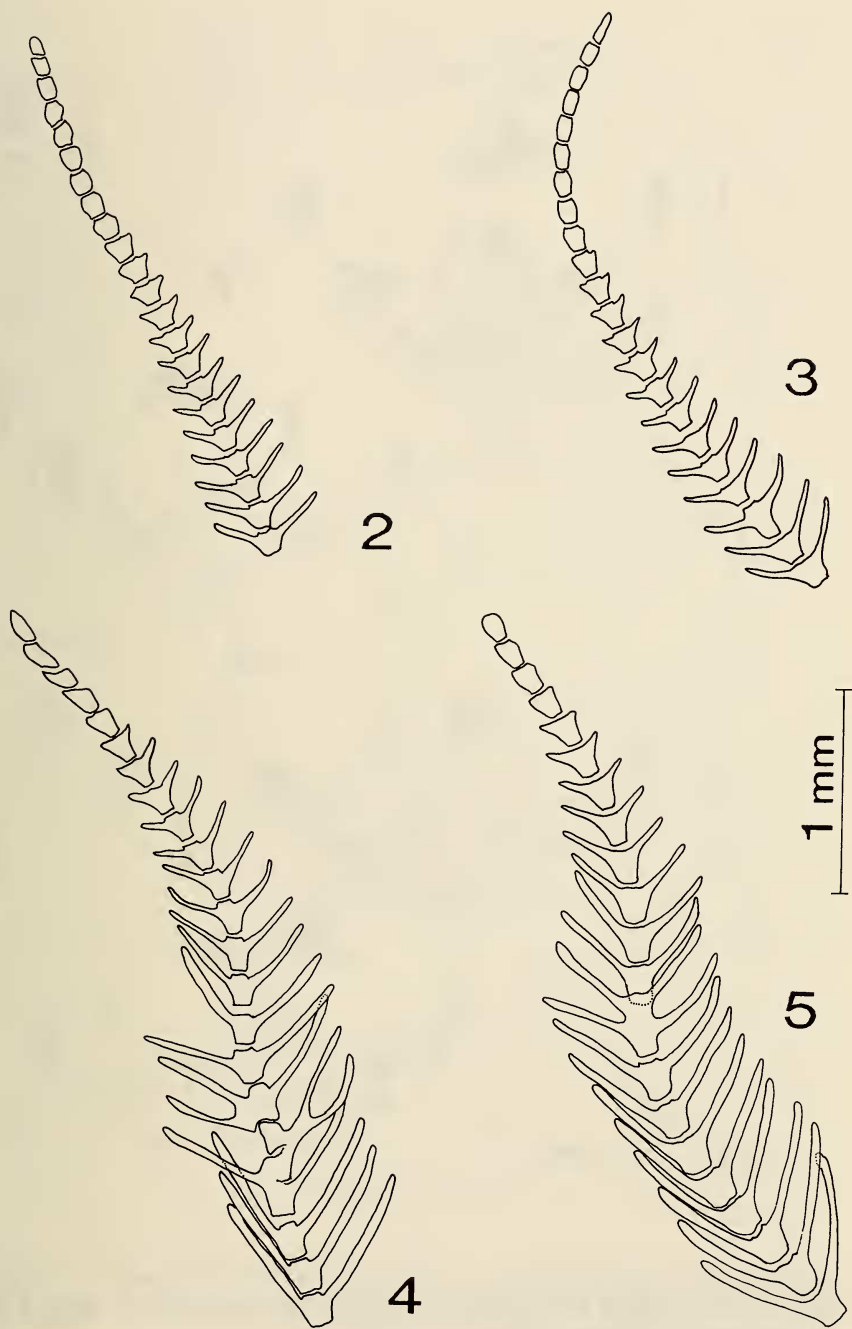
The differences in the male antennae between *crassa* and *lata* have already been discussed (Figs 2-5). Regarding the female antennae, several specimens identified by means of genitalic dissections were screened, but the structural constancy of the shape of the antennal segments which has been referred to for both species (FIBIGER, 1990) could not be confirmed. FERNÁNDEZ (1929) and CORTI (1930) emphasized also certain differences in the frontal protuberances. However, such protuberances have proven to be highly variable within both species and cannot yet be employed for diagnostic purposes, but they deserve further attention when studying infraspecific systematics.

The male genitalia of *Agrotis* species are very homogeneous (KOZHANTSHIKOV, 1937). In *crassa* and *lata* the male genitalia do not show remarkable differences and, according to the size attained by the adults, are quite variable as far as size and shape are concerned (Figs 6-13). Nevertheless, constant differences have been detected in the everted vesicae. Corresponding and taxonomically valuable characters are found in the female bursae (Figs 14-18) (terminology of the parts of the bisaccate bursa after CALLAHAN & CHAPIN, 1960).

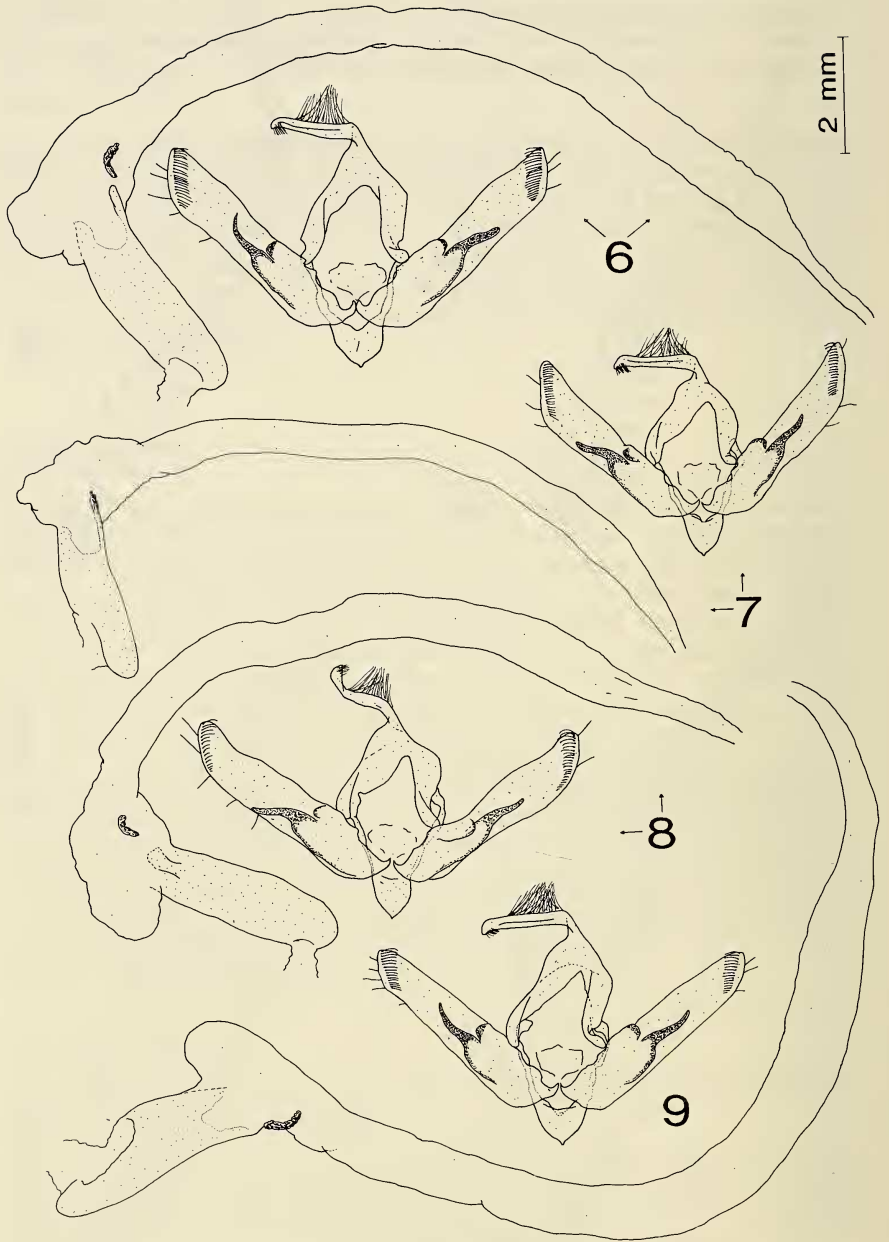
Agrotis crassa HB.

Vesica very long and slender (Figs 6-10), up to 4-5 times the length of the aedeagus ; basal swelling prominent.

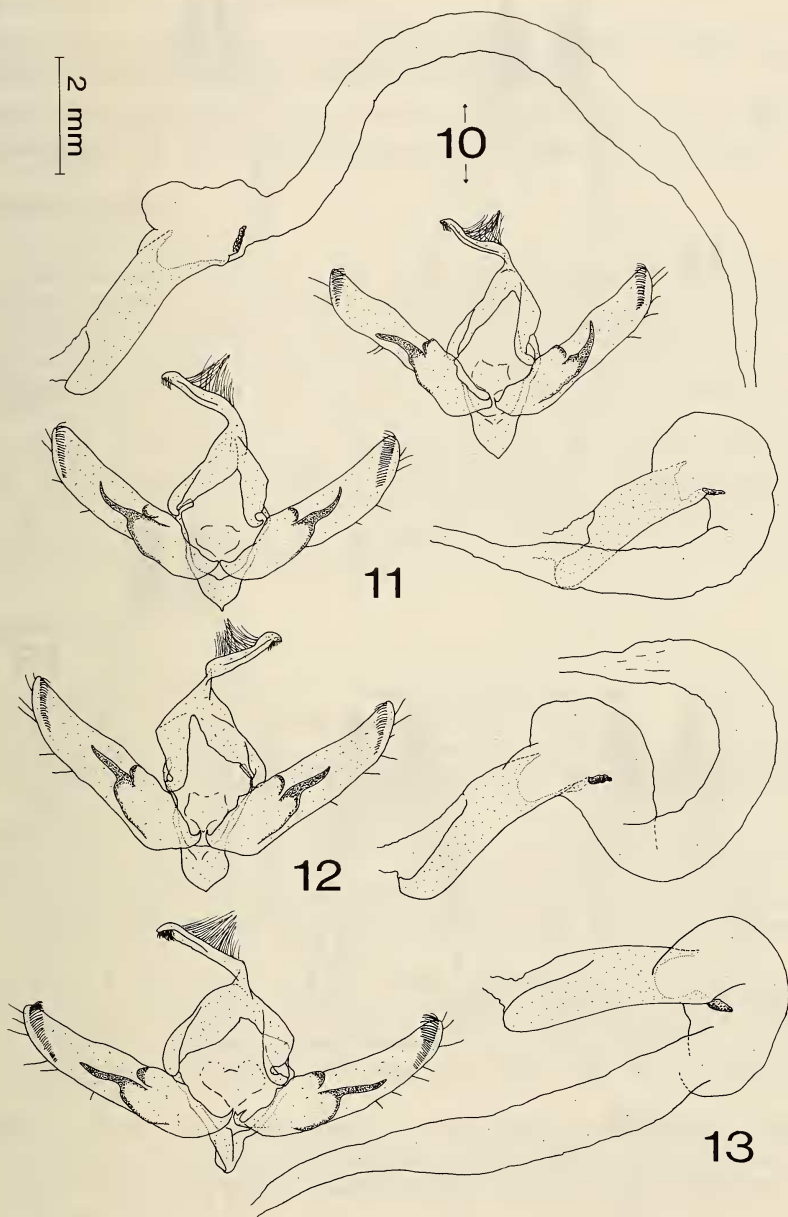
Bursa bisaccate, slender and lengthened (Figs 14-15) ; topographic separation between ductus and corpus bursae indistinct ; corpus bursae gradually swelling toward the terminal part so as to achieve a piriform shape ; cervix (= appendix) bursae inserted in the indistinct part connecting ductus and corpus bursae.



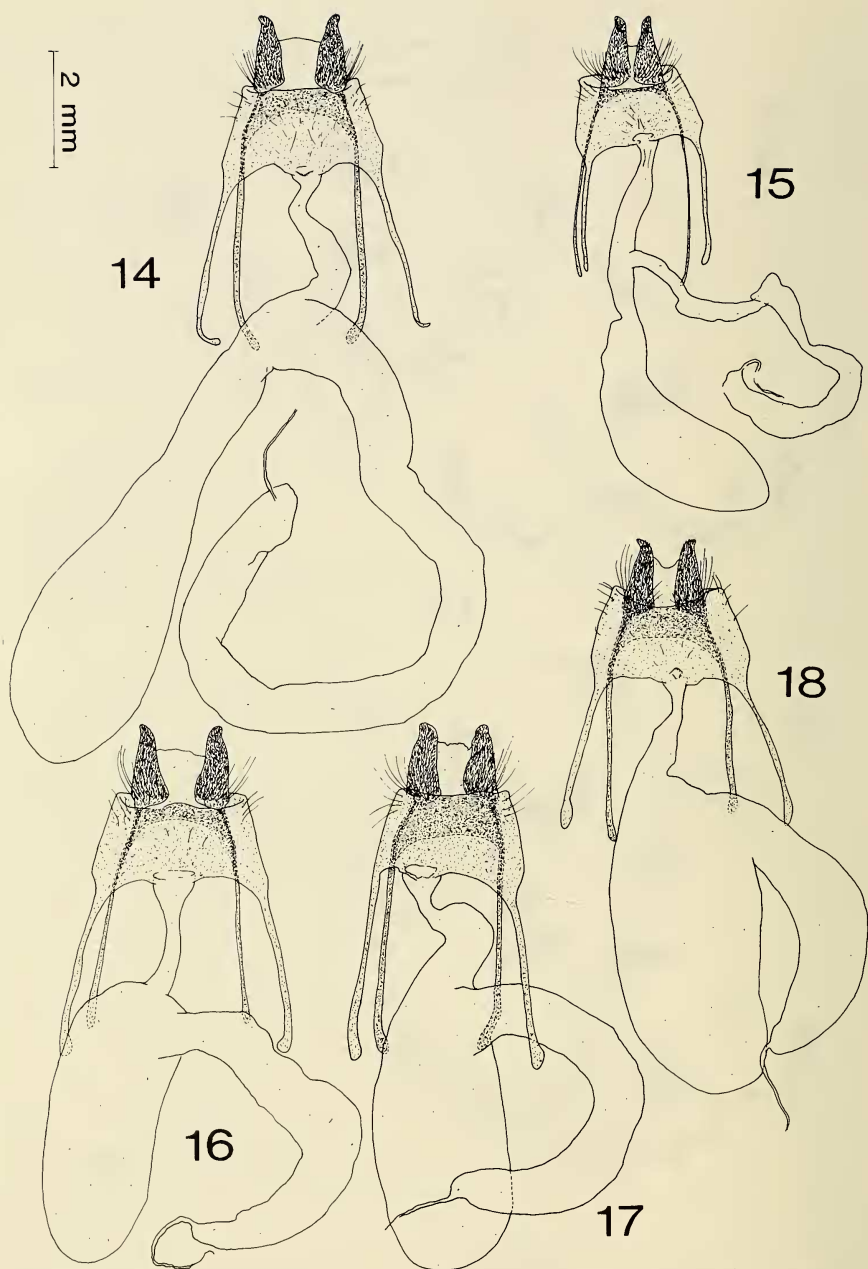
Figs 2-5. Male antennal apices of *Agrotis* spp. 2: *A. crassa* (HÜBNER), Spain, Frias de Albarracin. 3: idem, Italy, Fondi. 4: *A. lata* TREITSCHKE, Sicily, Cefalù. 5: idem, Spain, Lanjaron.



Figs 6-9. Male genitalia of *Agrotis crassa* (HÜBNER). 6 : Italy, Fondi. 7 : Spain, Frias de Albarracin. 8 : Germany, Karlsruhe. 9 : Italy, Rome.



Figs 10-13. Male genitalia of *Agrotis* spp. 10 : *A. crassa* (HÜBNER), Sicily, Giacalone. 11 : *A. lata* TREITSCHKE, Spain, Lanjaron. 12 : idem, Sicily, Cefalù. 13 : idem, Sicily, Palermo.



Figs 14-18. Female genitalia of *Agrotis* spp. 14 : *A. crassa* (HÜBNER), Sicily, Ficuzza. 15 : idem, Austria, Wien. 16 : *A. lata* TREITSCHKE, Sicily, Cefalù. 17 : idem, Sicily, Ficuzza. 18 : idem, Algeria, Tlemcen.

Agrotis lata TR. (= *dirempta* STGR)

Vesica shorter, stout (Figs 11-13), barely exceeding 3 times the length of the aedeagus ; basal swelling more smooth and regular.

Bursa stout (Figs 16-18) ; corpus bursae bag-shaped, well distinct from the ductus bursae ; cervix bursae clearly inserted at the base of corpus bursae.

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Note added in press

Beck (1991, *Atalanta* 22 : 180), in an extremely "splitting" paper, has recently described the genus *Crassagrotis* for the species dealt with in the present work. The phylogenetic (s.l.) value of Beck's work is not under discussion, rather his taxonomic philosophy, which seemingly implies that the current nomenclatural system is adequate for depicting phylogenetic relationships and that this is its main purpose, a matter open to considerable debate.